American Heart Journal Plus: Cardiology Research and Practice 52 (2025) 100525

Contents lists available at ScienceDirect

American Heart Journal Plus: Cardiology Research and Practice

journal homepage: www.sciencedirect.com/journal/american-heart-journal-plus-cardiology-research-and-practice

Review Article

Colchicine therapy in cardiovascular medicine: A literature review

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ARTICLE INFO

Keywords:
Colchicine
Cardiovascular disease
Heart failure
Atrial fibrillation
Coronary artery disease

ABSTRACT

Introduction: Inflammation is a key risk factor in cardiovascular diseases, such as atherosclerosis, and has been linked to increased mortality following myocardial infarction. While inflammation promotes tissue repair, sustained inflammation can drive adverse cardiac remodeling, fibrosis, and impaired contractility, resulting in poorer outcomes. This maladaptive remodeling, compounded by oxidative stress, also predisposes patients to cardiovascular diseases. Colchicine has shown anti-inflammatory benefits in cardiovascular disease, but its role in individual diseases remains unclear. This literature review seeks to understand and evaluate the clinical trials evaluating colchicine in cardiovascular treatment.

Methods: A literature search identified randomized controlled trials (RCTs) evaluating colchicine in cardiovascular disease including coronary artery disease, post-myocardial infarction treatment, atrial fibrillation, heart failure, and stroke.

Conclusions: Colchicine has been studied across many cardiovascular conditions including atrial fibrillation (AF), coronary artery disease (CAD), post-myocardial infarction treatment, heart failure (HF) and stroke; however, evidence of its clinical effectiveness remains mixed. While colchicine has shown prfomise in reducing recurrent cardiovascular events in stable CAD, its impact in postoperative AF prevention, acute coronary syndrome (ACS), HF, and stroke prevention is limited.

1. Introduction

Inflammation has been found to be a major risk factor in many cardiovascular diseases including atherosclerosis and has been linked to increased mortality post myocardial infarction (MI) [1,2]. In atherosclerotic plaque disease, cholesterol has been noted to activate the inflammasome and lead to atherogenesis and progression of disease [3]. Furthermore, in the post-MI period, inflammation plays a role in promoting tissue repair; however, when sustained, inflammation can lead to improper cardiac remodeling, fibrosis, and worse contractility and outcomes [1,4,5]. This same cardiac remodeling and fibrosis, in conjunction with oxidative stress, can promote pathways for aberrant electrical and structural remodeling within the atria and lead to atrial fibrillation (AF), and possibly heart failure (HF) [6]. Therefore, it is reasoned that an anti-inflammatory agent can be used to address these issues in cardiovascular disease.

Colchicine is an anti-inflammatory agent that has been shown to have potential benefits in many cardiovascular conditions. Colchicine acts on microtubules to inhibit the assembly and production of certain inflammatory markers [7]. The effects of colchicine also impair neutrophil function which may interfere with atherosclerotic plaque production [7]. For these reasons colchicine has been studied as a treatment option in many cardiovascular diseases including coronary artery disease (CAD), AF, and more recently HF and stroke.

Inflammatory markers such as interleukin-6 (IL6) and C-reactive protein (CRP) are often used to assess the degree of inflammation and response to treatment. These markers are used because they are easily detectible in the serum and are often released in large amounts [8]. CRP is an acute phase reactant that is secreted in the bloodstream in response to IL6 signaling [8]. These inflammatory markers are often used in cardiovascular disease to assess response to treatment with colchicine.

One benefit of colchicine is its safety profile at low doses [7]. The most common side effect of colchicine therapy is lower gastrointestinal symptoms, which limits use in some patients [7,9]. Some patients taking colchicine report myalgias, however this is not a common reason for the drug to be discontinued. That, combined with a possible rise in liver function tests, cause some hesitation in those concurrently taking statin drugs. Prolonged use, however, is not associated with liver dysfunction and most patients with liver disease can continue colchicine therapy [7].

Colchicine therapy, while traditionally used in the treatment of

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https://doi.org/10.1016/j.ahjo.2025.100525
Received 2 December 2024; Received in revised form 14 February 2025; Accepted 6 March 2025

inflammatory conditions, has emerged as a potential therapeutic agent in cardiovascular disease. Recent studies have emerged reviewing colchicine's use in coronary artery disease, stroke, and more recently heart failure. This literature review seeks to understand the current literature regarding the use of colchicine in the treatment of a variety of cardiovascular diseases.

2. Colchicine as a drug

Colchicine exerts its anti-inflammatory effects through a combination of mechanisms. At the level of the tubulins, colchicine inhibits the assembly of the inflammasome [7]. On a cellular level colchicine inhibits endothelial cell dysfunction, smooth muscle proliferation, macrophage functions, and platelet activation [10]. The endothelium controls functions such as vascular tone, angiogenesis, and is an important part of protecting cardiovascular health [10]. At different doses colchicine has different effects on endothelial cells. At lower doses colchicine inhibits microtubule dynamics and at higher doses it inhibits cell division. Smooth muscle cells are an important part of cardiovascular disease playing a role in the pathogenesis of hypertension, atherosclerosis, and other cardiovascular diseases. Smooth muscle cells also play a role in macrophage recruitment leading to plaque. Colchicine inhibits the microtubules which can inhibit the proliferation of smooth muscle cells [10]. At a molecular level colchicine inhibits nuclear factor-kappa B thereby decreasing levels of IL-6.

Colchicine is sparingly used in clinical practice because of its side effect profile. Many patients experience dose dependent vomiting, diarrhea, and abdominal upset within days of starting treatment [7,10]. It is metabolized in the liver and eliminated through the kidneys. This makes treating patients with comorbidities difficult.

Another challenge in the use of colchicine in clinical practice is the interactions with other medications. Colchicine is metabolized by Cytochrome CYP3A4 and P-glycoprotein inhibitors. Drugs such as including clarithromycin, ketoconazole, fluconazole have strong interactions and are generally avoided during the use of colchicine. Other cardiovascular drugs such as diltiazem, verapamil, amiodarone, carvedilol, and atorvastatin have mild interactions and mild dose reductions are often required in those with liver and renal dysfunctions [7].

Most cardiovascular trials on the use of colchicine recommend low dose 0.5-1 mg a day of colchicine. Toxic doses occur around 6-8 mg and can lead to multi-organ failure and death if doses exceed 0.8 mg/kg [10]. There is no specific treatment for colchicine toxicity and treatment is often supportive. Therefore, colchicine treatment should be closely monitored.

3. Methods

Literature search was performed using PubMed. Search words included “colchicine”, and “atrial fibrillation”, and “coronary artery disease”, and “heart failure”, and “stroke”. Results were limited to randomized controlled trials. There was no restriction placed on year. Articles were excepted if full text was available in English. Twenty studies overall were selected for review.

4. Colchicine in AF

Inflammation has shown to have a role in both the onset and recurrence of AF [11]. It has been linked to several pathological processes including oxidative stress, fibrosis, and thrombogenesis [11]. Activation of the inflammasome causes release of inflammatory cytokines that can lead to an increase of ectopic firing in AF, thereby causing further cardiac remodeling [12]. Enhanced inflammatory signals as well as the production of CRP and IL6 have been proposed as a link to the pathogenesis of AF [12].

Colchicine has been studied in the prevention of postoperative AF (POAF). Many trials have failed to demonstrate colchicine's effectiveness in reducing POAF in the setting of both, cardiac and noncardiac thoracic surgery [13–15](Table 1). One substudy on the use of colchicine following cardiac surgery demonstrated that the use of colchicine did reduce the incidence of POAF by 45 % and was associated with a reduced hospital stay. However, this study seems to be an outlier; the study was associated with a small sample size and treatment was started on the third day post operatively [16]. AF is more likely to occur in the first few days following surgery, this study may have missed those cases.

One study was done to evaluate the efficacy of colchicine in preventing perioperative AF during non-cardiac thoracic surgery. The COP-AF trial was a multicenter RCT that assessed the use of prophylactic colchicine for 10 days in those undergoing noncardiac thoracic surgery (Table 1) [17]. This study found that colchicine 0.5 mg taken twice daily for 10 days did not significantly reduce incidence of AF, but did increase the risk of diarrhea and gastrointestinal side effects. In a post-hoc analysis however, colchicine did reduce the composite of clinically important perioperative AF and myocardial injury after non-cardiac surgery (MINS), and the composite of vascular death, non-fatal MINS, non-fatal stroke, and clinically important perioperative AF [17].

There have been studies done to evaluate the use of colchicine following ablation with pulmonary vein isolation procedures. One study done by Deftereos, demonstrated that colchicine, when taken after pulmonary vein isolation, was associated with lower AF recurrence after a single procedure, 31 % vs. 49.5 % in the placebo group (Table 1) [18]. The IMPROVE-PVI trial, published in November 2023, evaluated the effects of colchicine 0.6 mg twice daily for 10 days following a catheter ablation for AF, including planned pulmonary vein isolation (Table 1) [19]. This study found that, while reducing chest pain consistent with pericarditis following ablation, colchicine was not associated with a reduction in atrial arrhythmia recurrence or composite outcomes associated with AF. Colchicine therapy also leads to an increase in diarrhea in patients.

While inflammation is a recognized contributor to AF onset and recurrence, current evidence on colchicine's effectiveness in AF prevention and management is mixed. Studies examining colchicine for POAF have largely shown limited benefit in both cardiac and noncardiac thoracic surgery settings, with the exception of a small substudy that reported a reduction in POAF incidence and hospital stay when colchicine was started on the third postoperative day. However, this finding may be limited by its small sample size and delayed initiation. The COP-AF trial demonstrated that prophylactic colchicine in noncardiac thoracic surgery did not significantly reduce AF incidence, though post-hoc analyses suggest possible benefits for composite outcomes. In the context of AF ablation, colchicine has shown some promise in reducing early recurrence post-pulmonary vein isolation (PVI) in the Deftereos study, but recent data from the IMPROVE-PVI trial indicated no significant effect on arrhythmia recurrence or major AF outcomes. Across trials, gastrointestinal side effects, particularly diarrhea, were common. Overall, while colchicine may reduce inflammation, further studies are needed to clarify its role and optimize its use in preventing and managing AF.

5. Colchicine in CAD

Inflammation in the cardiovascular system can lead to inflammation within the endothelium of the coronary arteries, and promote neutrophil migration, adhesion, and subsequently atherosclerosis [9]. Plaque rupture is one of the most clinically significant events in cardiology which leads to unstable angina or acute MI. Inflammation has been associated with complicated lesion rupture [20]. Colchicine's mechanism of action leads to a reduction of acute phase inflammatory markers but can also inhibit neutrophil and platelet aggregation [9]. Colchicine has been studied in both, stable CAD and in acute coronary syndrome (ACS), to reduce inflammation burden and lead to improved cardiovascular outcomes in patients.

There are two major clinical trials evaluating colchicine in the

Table 1
Summary of RCT's for colchicine in atrial fibrillation.

Study (year)	Design	Intervention	Control	Main outcomes	Result
COPPS- 2 (2014) [13]	RCT	Colchicine 0.5 mg BID or daily, 30 days	Placebo	Postpericardiotomy syndrome, secondary end point POAF	No significant differences in POAF
END - AF (2016) [14]	RCT	Colchicine 2 mg 12–24 h prior to surgery, 1 mg 4 h prior, followed by 0.5 mg BID until discharge	Placebo	Rate of POAF	Colchicine failed to reduce incidence of early POAF
Zarpelon (2016) [15]	RCT	Colchicine 1 mg BID preop and 0.5 mg BID until discharge	Placebo	POAF following myocardial revascularization surgery	Colchicine showed no reduction in AF incidence compared to control.
COPPS - POAF substudy (2011) [16]	RCT	Colchicine 1 mg BID post op day 3 followed up 0.5 mg BID for 1 month	Placebo	Incidence of POAF	Patients showed reduced incidence of POAF by 45 % risk reduction with shorter hospital stay
COP-AF (2023) [17]	RCT	Colchicine 0.5 mg BID, 10 days	Placebo	Clinically important perioperative AF or MINS	Colchicine did not significantly reduce risk of perioperative AF or MINS
Deftereos (2014) [18]	RCT	Colchicine 0.5 mg BID 3 months	Placebo	AF recurrence post pulmonary vein isolation	Colchicine was associated with lower AF recurrence rates after a single procedure 31 % vs 49.5 %.
IMPROVE- PVI (2023) [19]	RCT	Colchicine 0.6 mg BID for 10 days	Placebo	Atrial arrhythmia recurrence after catheter ablation	Colchicine did not prevent atrial arrhythmia recurrence at 2 weeks or 3 months

RCT = Randomized controlled trial, bid = twice daily, POAF = post operative atrial fibrillation, AF = atrial fibrillation, MINS = myocardial injury after non-cardiac surgery.

treatment of stable coronary artery disease, LoDoCo and LoDoCo2 [21,22] (Table 2). The LoDoCo trial studied low dose colchicine in patients with CAD on optimal medical therapy including aspirin and/or clopidogrel [21]. This initial study was a small prospective, randomized trial that showed that colchicine 0.5 mg daily, in addition to standard treatment, appeared effective in the prevention of cardiovascular events in patients with stable CAD. A larger placebo-controlled trial, LoDoCo2, studied colchicine 0.5 mg in patients with chronic coronary artery disease and showed that cardiovascular events were significantly lower in those who received colchicine; 6.8 % versus 9.6 % in placebo [22]. The results of these combined trials are promising in the treatment of stable CAD with low-dose colchicine.

Following an MI, inflammatory cells infiltrate the myocardium and can ultimately lead to scar formation and fibrosis [23]. Biological inflammatory markers, such as CRP, are associated with worse outcomes post-MI and revascularization [24]. There are two trials, the LoDoCo-MI and COLIN trials, that evaluated CRP levels following treatment with colchicine in acute MI or ST elevation MI (STEMI) (Table 2) [24,25]. The COLIN trial was a small, open label, controlled prospective study done in 2017, that evaluated patients with STEMI successfully treated with percutaneous coronary intervention (PCI) [24]. Patients either received optimal medical therapy alone, or optimal medical therapy and colchicine 1 mg daily for 1 month. This study failed to show efficacy of colchicine to reduce CRP peak values, indicating that it is not effective in reducing inflammation post-MI. The LoDoCo-MI trial was a randomized, double-blind, trial that tested low-dose colchicine in patients admitted with an MI [25]. This study found that while colchicine was safe and well tolerated, it was not associated with an increased likelihood of achieving a lower CRP level following an MI. Overall, colchicine was not associated with a decrease in CRP levels following an acute MI.

COPE-PCI was a randomized control trial published in 2021, comparing the use of colchicine to placebo, in the treatment of periprocedural myocardial infarction and injury during PCI in patients presenting with stable angina or non-STEMI (Table 2) [26]. Colchicine

Table 2
Summary of RCT's for colchicine in coronary artery disease.

Study (year)	Design	Intervention	Control	Main outcomes	Result
LoDoCo (2013) [21]	RCT	Colchicine 0.5 mg daily	Conventional treatment	Composite of ACS, out of hospital cardiac arrest, or noncardioembolic ischemic stroke	Colchicine had a reduction in the primary outcome in 5.3 % vs 16 % in the control
LoDoCo2 (2020) [22]	RCT	Colchicine 0.5 mg daily	Placebo	Composite of CV death, spontaneous MI, ischemic stroke, or ischemia-drive coronary revascularization	The risk of CV events was significantly lower in those that received colchicine (6.8 % vs 9.6 %)
COLIN (2017) [24]	RCT	Colchicine 1 mg daily for 1 month	Optimal medical treatment	CRP peak values post - STEMI	No significant difference in mean CRP peak values
LoDoCo-MI (2019) [25]	RCT	Colchicine 0.5 mg daily	Placebo	CRP levels following acute MI	No significantly increased likelihood of achieving CRP levels <2 mg/L or lower absolute CRP levels 30 days after MI
COPE PCI (2021) [26]	RCT	Colchicine 1 mg followed by 0.5 mg	Placebo	Periprocedural MI	Absolute change in hs-troponin-I was significantly lower in colchicine vs placebo 59 vs 166, significantly fewer patients developed major PM-injury with colchicine 31 % vs 54 %
COLCOT (2019) [28]	RCT	Colchicine 0.5 mg daily	Placebo	Composite of CV death, resuscitated cardiac arrest, MI, stroke, urgent hospitalization requiring coronary revascularization	Colchicine lead to a large reduction of CV events following an MI
Colchicine PCI (2020) [29]	RCT	Colchicine 1.8 mg	Placebo	Composite of death, non-fatal MI, and target vessel revascularization after 30 days and outcome of PCI related MI	Composite outcome did not differ between groups
COLOCT (2024) [30]	RCT	Colchicine 0.5 mg daily	Placebo	Minimal fibrous cap thickness post ACS	Colchicine significantly increased minimal fibrous cap thickness 51.9 vs 87.2.
CLEAR SYNERGY OASIS 9 (2024) [31]	RCT	Colchicine 0.5 mg	Placebo	MACE, composite of CV death, MI, stroke, or ischemia driven revascularization	Routine colchicine following PCI for acute MI was not beneficial

RCT = Randomized controlled trial, ACS = Acute coronary syndrome, CV = cardiovascular, MI = Myocardial infarction, CRP = C-reactive protein, STEMI = ST elevation myocardial infarction, PCI = percutaneous coronary intervention, MACE = major adverse cardiovascular events.

was given to patients 6 to 24 h prior to the procedure. The main outcome for this trial was assessed by an increase in post-PCI troponins levels. The results of this study showed that colchicine significantly lowered absolute changes in hs-troponin-I, and resulted in significantly fewer patients with major periprocedural injury. This study also showed no difference in CRP levels between the groups. This study, however, has a few limitations. It was a small, single center study that involved many patients who were randomized to a group and did not undergo PCI. Therefore, these patients were not included in the trial data. Nonetheless, the results of this study were promising in treating periprocedural myocardial injury.

Inflammation plays a pivotal role in ACS, which is implicated in plaque destabilization and rupture. The inflammatory response is mediated by various immune cells and inflammatory marker elevations, such as CRP and IL6, which have been associated with increased risk and severity of ACS [27]. Several clinical studies have studied the use of colchicine following an ACS event. The COLCOT trial is one of the foundational randomized, clinical trials which showed that, when used within 30 days of an MI, colchicine had a significant reduction of future cardiovascular events (Table 2) [28]. The COLCHICINE-PCI study published in 2020 studied the use of colchicine prior to PCI in those with ACS or possible ischemic CAD (Table 2) [29]. The primary outcome of this study was related to PCI-related myocardial injury, defined by troponin I measurements, following PCI. This study failed to show a significant difference in the primary outcome of myocardial injury or a significant difference in adverse cardiovascular events. A recent trial, the COLOCT trial, studied the impact of colchicine on coronary plaques post-ACS [30]. This trial utilized optical coherence tomography to assess colchicine's effect on plaque stability. The results of this trial showed that colchicine led to significant changes in plaque morphophonology, with a decrease in inflammatory markers. Minimal fibrous cap thickness was changed from 51.9 vs 87.2 in placebo. Overall, evidence points towards the use of colchicine in reducing cardiovascular events following an ACS event.

The newest clinical trial evaluating colchicine's effect in CAD is the CLEAR SYNERGY OASIS 9 trial. The CLEAR SYNERGY (OASIS 9) trial evaluated the use of colchicine, in conjunction with a SYNERGY drug-eluting stent, in patients undergoing PCI (Table 2) [31]. This trial showed that from baseline to 3 months later, CRP levels showed a larger reduction in the treatment arm with colchicine. There was no difference in cardiovascular death, MI, stroke, or ischemia-driven revascularization. Non- cardiovascular deaths were lower in the colchicine arm but this was likely due to chance. Rates of diarrhea were also higher in the colchicine group within the trial.

In stable CAD, the LoDoCo and LoDoCo2 trials demonstrated that low-dose colchicine reduces cardiovascular events [21,22]. The LoDoCo-MI and COLIN trials found colchicine did not lower CRP levels, suggesting limited effectiveness in reducing inflammation post-MI [24,25]. In the COPE-PCI trial, colchicine reduced myocardial injury in PCI procedures, although without having significant impact on CRP levels [26]. For ACS, the COLCOT trial showed that colchicine reduced future cardiovascular events when used within 30 days post-MI, while the COLOCT trial demonstrated improved plaque stability with colchicine, showing changes in plaque morphology and a reduction in inflammatory markers [28,30]. The latest OASIS 9 trial also failed to demonstrate a difference in cardiovascular events with colchicine use, following PCI with a drug-eluting stent [31].

6. Colchicine in HF

In recent years there has been a significant increase in research exploring the role of systemic inflammation in HF, and how it contributes to disease progression. Inflammation has been linked to HF development, progression, and is a predictive indicator of poor outcomes [32]. While inflammation has been linked across the HF spectrum, there are very few research studies evaluating anti-inflammatory medications for the treatment of heart failure [33]. To date, there are two major trials assessing the use of colchicine in heart failure patients: the Deftereos trial in 2014 and the COLICA trial (Table 3) [34,35].

In a study led by Deftereos in 2014, the impact of colchicine in patients with stable heart failure was studied by using the primary endpoint of patients achieving New York Heart Association (NYHA) class improvement [34]. This study found that patients taking colchicine did not have any effects in functional status, reduced likelihood of death, or hospitalization. Colchicine therapy, however, did reduce inflammatory markers. The COLICA trial aimed to evaluate the efficacy of colchicine in patients with acutely decompensated heart failure [35]. The primary end point of the study was reduction in NT-pro-BNP levels at 8 weeks, and did not differ between the colchicine and the placebo group. The trial did show that participants receiving colchicine showed a reduction in inflammatory markers, CRP and IL-6. There was also a reduction in the need for intravenous furosemide in the colchicine treatment group. Overall, the trial did not find any differences in new or worsening heart failure episodes.

In conclusion, while systemic inflammation plays a clear role in the pathogenesis and progression of HF, current evidence does not support colchicine as an effective treatment to improve functional outcomes or reduce hospitalization rates in HF patients. Although the Deftereos and COLICA trials demonstrated reductions in inflammatory markers with colchicine, neither study found significant improvements in HF symptoms or clinical endpoints, such as mortality or re-hospitalization. These findings emphasize the need for continued research into targeted anti-inflammatory therapies, that may directly impact heart failure progression and outcomes.

7. Colchicine in stroke

Non-cardioembolic, ischemic strokes have a complex pathophysiology, including atherosclerotic plaque formation, endothelial cell dysfunction, and increased vascular inflammation [36]. Inflammation has been linked to increased risk of stroke events, and inflammatory markers, such as CRP, have been linked to increased incidence of vascular disease [37]. Recently, colchicine has been studied as an anti-inflammatory treatment with two notable clinical trials: the CHANCE-3 trial and the CONVINCE trial (Table 4) [38].

The CHANCE-3 trial was conducted in China and focused on a short-term timeframe for the effects of colchicine in preventing recurrent strokes [38]. The patients in this study had elevated inflammatory markers and were followed over a 90-day period. This study failed to demonstrate a benefit of colchicine in preventing recurrent ischemic strokes. The CONVINCE trial spanned multiple countries in Europe and Canada and assessed the use of long-term colchicine in prevention of recurrent stroke events [39]. This trial studied low-dose colchicine daily in over 3000 patients. It failed to demonstrate efficacy of long-term colchicine, and patients had a significantly increased incidence of diarrhea.

In summary, while inflammation contributes to the pathophysiology of non-cardioembolic, ischemic strokes, with elevated inflammatory markers such as CRP linked to higher stroke risk, colchicine failed to demonstrate benefit for stroke recurrence. The CHANCE-3 and CONVINCE trials faced limitations that may have influenced their findings on colchicine's efficacy in stroke prevention. In CHANCE-3, a short 90-day follow-up may have missed long-term effects, and conducting the trial exclusively in China limited its generalizability to other populations. In the CONVINCE trial, higher rates of gastrointestinal side effects in the colchicine group may have affected patient adherence, potentially impacting results. The trial's multi-country design also introduced variability in standard care practices, and diverse stroke etiologies that could make it challenging to identify if specific subtypes might benefit differently. These factors suggest that future research could benefit from longer follow-up, diverse population samples, and strategies to improve medication adherence.

Table 3
Summary of RCT's for colchicine in heart failure.

Study (year)	Design	Intervention	Control	Main outcomes	Result
Deftereos (2014) [34]	RCT	Colchicine 0.5 mg BID for 6 months	Placebo	One grade improvement in NYHA class	Reduction in inflammatory markers with no change in NYHA class
COLICA (2024) [35]	RCT	Colchicine 2 mg followed by 0.5 mg BID for 8 weeks	Placebo	Change in NT-proBNP levels	Colchicine was associated with reduction in CRP and IL-6. No difference in reducing NT-proBNP and preventing new HF events

RCT = Randomized controlled trial, NYHA = New York Heart Association, bid = twice daily, NT-ProBNP = N-terminal pro-B-type natriuretic peptide, CRP = C reactive protein, IL-6 = Interleukin 6, HF = Heart failure.

Table 4
Summary of RCT's for colchicine in stroke.

Study (year)	Design	Intervention	Control	Main outcomes	Result
CHANCE 3 (2024) [38]	RCT	Colchicine 0.5 mg bid for 3 days followed by 0.5 mg daily for 90 days	Placebo	Any new stroke in 90 days	No statistically significant difference in stroke events
CONVINCE (2024) [39]	RCT	Colchcine 0.5 mg daily	Usual care alone	Recurrent non-fatal ischemic stroke	No statistically significant difference in stroke events

RCT = Randomized controlled trial, bid = twice daily.

8. Conclusion

Inflammation plays a complex role in the context of disease progression in many areas of cardiovascular medicine including AF, CAD, post-MI and ACS, HF, and stroke. Colchicine, with its anti-inflammatory properties, has been studied across these conditions; however, evidence of its clinical effectiveness remains mixed. While colchicine has shown promise in reducing recurrent cardiovascular events in stable CAD, its impact in POAF prevention, ACS, HF, and stroke prevention is limited. Trials like LoDoCo and COLCOT demonstrated positive outcomes in CAD, but studies in AF, such as COP-AF and IMPROVE-PVI, as well as in HF and stroke, failed to show consistent benefits, often limited by small sample sizes, side effects, and variability in trial designs. Across studies, gastrointestinal side effects were a recurring issue, potentially affecting patient adherence. These findings highlight the need for further research, in order to clarify colchicine's role, optimal dosing, timing, and patient selection in cardiovascular disease management, while exploring more targeted anti-inflammatory therapies that may offer improved efficacy and tolerability.

CRediT authorship contribution statement

Jennifer Trube: Writing – review & editing, Writing – original draft, Data curation, Conceptualization. **Michael Sabina:** Writing – review & editing, Writing – original draft, Conceptualization. **Aqeel Khanani:** Writing – review & editing. **Kayla Hernandez:** Writing – review & editing, Conceptualization. **Zoya Khan:** Writing – review & editing, Writing – original draft. **Anas Bizanti:** Writing – review & editing, Supervision.

Funding

No funding to disclose.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No new data was generated or analyzed in support of this research.

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